

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1-50. (Canceled).

51. (Currently amended) ~~The method of claim 39~~ A method of field detection for obtaining a complete magnetic gradient tensor of a magnetic field, the method comprising: providing at least three gradiometers in the magnetic field, each of the gradiometers having at least first and second field vector sensors connected in a differencing arrangement; and controllably altering a position of the at least first and second field vector sensors relative to the field during operation of said each of the gradiometers;

the gradiometers being axial gradiometers arranged in the magnetic field such that an axis of each axial gradiometer is not parallel to an axis of any other one of the at least three gradiometers; the method further comprising controllably altering a position of each of the at least three axial gradiometers relative to the magnetic field during operation of said each of the at least three axial gradiometers;

wherein DC offsets are determined and monitored to provide information about the operating conditions of the gradiometers, and wherein the DC offsets comprise one or both of: low frequency drift in at least one field vector sensor of the at least three gradiometers; and the fixed offset of at least one field vector sensor of the at least three gradiometers.

52-53. (canceled)

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Amendment dated June 30, 2008
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54. (Currently Amended) The method of claim 51 ~~39~~ wherein the at least three axial gradiometers are rotated at differing frequencies, in order to facilitate separation of their data signals in the Fourier domain.

55-59. (Canceled).

60. (Currently Amended) A field detection device comprising: at least three gradiometers, each of the gradiometers having at least first and second field vector sensors connected in a differencing arrangement; and means for controllably altering the position of the at least first and second field vector sensors relative to a field during operation;

said gradiometers being axial gradiometers positioned such that an axis of each axial gradiometer is not parallel to an axis of any other one of the at least three gradiometers; and

means for controllably altering a position of each of the at least three gradiometers relative to the magnetic field during operation of said each of the at least three gradiometers,

~~The device of claim 55~~ wherein the at least three axial gradiometers are rotated at differing frequencies, in order to facilitate separation of their data signals in the Fourier domain.

61. (Canceled)

62. (Currently Amended) The device of claim 60 ~~55~~ further comprising means for detecting and measuring a DC offset, wherein the DC offset comprises one or both of: low frequency drift in at least one field vector sensor of the at least three gradiometers; and the fixed offset of at least one field vector sensor of the at least three gradiometers.

63-65. (canceled).

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66. (Currently Amended) The device of claim 60 ~~55~~ further comprising means for distinguishing field gradient information from field information in the Fourier domain.

67-72. (canceled)